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Conference Abstract

US Department of Agriculture and global biogenome initatives: policy challenges and opportunities

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Abstract

Biodiversity research is seeing unprecedented global collaboration with initiatives such as the Earth BioGenome Project, an effort to sequence all known eukaryotic life, and Genesys, a global database for sharing crop genetic resources. However, as in other disciplines, public funding and policy for scientific research in agriculture tend to follow national borders even when science and its collaborations do not. In addition, agriculture is similar to biomedicine in having significant private investment in research and development where competition could inhibit sharing. It would seem that significant challenges lie ahead for making progress on ambitious global initiatives at least where agricultural samples, collections, and data are concerned. In this talk we will review several activities at the United States Department of Agriculture that illustrate how policy and infrastructure can overcome difficulties. For example, recent policies for openness of publicly-funded research products and adoption of FAIR data principles even for private or proprietary data hold promise and have elevated the importance of data infrastructure. The US Department of Agriculture's Agricultural Research Service (ARS) launched its Ag100Pest contribution to the Earth BioGenome Project, including the use of the i5K Workspace@NAL platform for its sequenced and annotated genomes. The GRIN Global platform supports not just USDA

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germplasm data management but a growing network of plant and animal researchers and collections around the world. The Ag Data Commons provides standardized metadata and machine-readable data dictionaries to the publicly accessible products of these and other USDA-funded efforts. It is teaming with the ARS high performance computing system SCINet to explore cost-effective public access to big data storage for agricultural data and models. Finally, many of these efforts extend and contribute back to widely used open source software systems. While challenges remain in coordinating and sustaining these efforts with international stakeholders, engagement with groups like AgBioData, the Research Data Alliance (RDA) Interest Group on Agricultural Data, and the Global Open Data for Agriculture and Nutrition coalition will continue to bear fruit (pun intended). We seek similar engagement with the broader biodiversity data community in order to ensure that policy and infrastructure investments result in maximum mutual benefit.

Keywords

agriculture, crops, insect pests, repositories, open source software, policy, international engagement

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